



Aviation Education News



Distributed Quarterly to Promote Aviation Education and Awareness in Virginia

May 1999

In this Issue:

Aviation and Space Congress Offers Something for All

..... Page 1

President's Notes Page 2

Virginia Department of Aviation Teachers Grant Program

Page 3

1999 Virginia Aviation Art Contest Results

Page 4

NASA CONNECT Page 5

Aviation Education Corner

Page 6

The Coupes are Returning to College Park

Page 7

SVCC Workshop Page 7

Web Sites Page 7

Calendar of Events Page 8

Aviation and Space Congress Offers Something for All!

Educators from across the United States, and even internationally, attended the 32nd annual National Congress on Aviation and Space Education held in Orlando, Florida over the spring break holiday, April 7-9, 1999. The Congress, sponsored by the Civil Air Patrol, offers teachers at all grade levels the opportunity to learn more about aviation and space and to bring home with them useful activities which they can use in the classroom.

A roster of concurrent sessions available to educators included hands-on aviation and space projects (including building gliders, kites, and rockets), aviation and space history, NASA programs for teachers, new software available to educators, etc.

Among the prominent speakers this year was Marine Maj. Rick Sturckow who flew as pilot on STS-88 this past December. This space shuttle mission was the first to begin construction on the International Space Station.

On Saturday educators either took a VIP tour of the Kennedy Space Center and Cape Canaveral Air Station or attended special workshops held at the site of the annual "Sun 'n Fun" general aviation fly-in in Lakeland, Florida. --bpw



Photos of Shuttle Launch Pad and Cape Canaveral rockets by Betty Wilson.

PRESIDENT'S NOTES:

Pete Thomas, NASA Precollege Aerospace Education Specialist, has participated with aviation as the focus of his efforts by participating at the National Science Teachers Association (NSTA) conference in Boston, Massachusetts (March 23-28, 1999). Aeronautics and Space Transportation Technology was one of four NASA enterprises that were shown and demonstrated to the 18,000 teachers participating. He also presented hands-on activities at the National Congress on Aviation and Space Education (NCASE) in Orlando, Florida (April 7-9, 1999) and the annual general aviation fly-in "Sun 'n Fun" at Lakeland, Florida (April 10-17, 1999). The teacher workshop presentations included the "Kimoto Flyer" as well as representing all phases of NASA Educational outreach and in-house programs.

Please visit our site on the the web:

<http://edu.larc.nasa.gov/>

Some Scenes from "Sun 'n Fun"



X-34 Program (NASA Exhibit)



AGATE Program (NASA Exhibit)



Mars (NASA Exhibit)

VASEF AVIATION EDUCATION NEWS is published quarterly in support of aviation education in the Commonwealth of Virginia by the Virginia Department of Aviation

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(NASA)

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VASEF NEWS Editor: Betty Wilson

Please send story ideas, photographs, calendar events, and other items for possible inclusion to:

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5702 Gulfstream Road
Richmond, Virginia 23250-2422
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wilson@doav.state.va.us (E-mail)
<http://www.doav.state.va.us> (Internet)



VASEF PURPOSE

The Forum is a non-profit organization to promote and foster aviation and space education among public and private schools, colleges and universities, and community and civic groups, and to promote increased public understanding of aviation and space and their economic, social, and career values in our society and in the Commonwealth of Virginia.

Second Year!

Virginia Department of Aviation Teachers Grant Program

Have you wanted to enhance your students' learning experience by integrating aviation into your teaching? Have you had a great idea for a lesson plan or other class activity with an aviation-related theme that you felt would benefit your students but could not implement because of lack of funding?

The Virginia Department of Aviation's Teachers Grant Program may be able to assist you!

Guidelines:

1. A maximum of one grant per individual teacher and /or school per school year is allowed.
2. The total amount requested for each grant must not be more than \$250.00. There is a cap on total grant funding for each school year. Grant applications will be ranked and funded until this cap has been reached.
3. Funds must be used before the end of the school year in which they are approved.
4. The requirements below must be met in order to apply and, once selected, to be reimbursed.

Requirements:

1. Classroom teachers in Virginia's public schools in grades K-12 are eligible to apply. Grants are available to teachers in any discipline provided that the lesson involves aviation.
2. Applications for the 99/00 school year (at right) must be completed and postmarked no later than **September 30, 1999**. Applications will be evaluated and successful applicants will be notified before the end of October 1999.
3. Successful applicants must complete their program before the end of the school year in which the grant is awarded.
4. Successful applicants must agree to submit a final report to the Virginia Department of Aviation at the completion of the program (no later than the end of the school year in which the grant is awarded). This report must include: a summary describing how the program turned out, any lesson plans developed (at least one is required), how many students benefited from the program, a materials list with costs, and an accounting of how the grant money was spent.

Return completed applications to:

Virginia Department of Aviation
Attn: Betty P. Wilson
5702 Gulfstream Road
Richmond, Virginia 23250-2422

Telephone: (804) 225-3783
FAX: (804) 236-3635
E-Mail: wilson@doav.state.va.us



Virginia Department of Aviation Teachers Grant Application

Your Name: _____

If you are requesting the grant as a member of a team, please list team members names below:

Mailing Address: _____

City/State/Zip: _____

Circle one: home address school address

Your Telephone Number: _____

Circle one: home telephone school telephone

Your E-Mail Address: _____

School Name: _____

Grade Taught: _____ Subject: _____

Describe your lesson idea - must utilize some facet of aviation: (in 150-500 words)

Attach additional sheets and/or lesson plans, if prepared.

What Learning Outcomes are you looking for from this project?

If funded, how do you propose to share this lesson with your colleagues?

Amount Requested: _____

What will the grant money be used for: _____

I agree that before the end of the school year in which I receive this grant, I will complete the above project; that I will provide a final report on the program, including copies of lesson plans developed (at least one is required), a summary of how well the program worked, how many students benefited from the program, a shopping list of materials (and costs) for supplies, and an accounting of where the grant money was spent. I understand that the Virginia Department of Aviation will pay for or reimburse only those amounts approved in the original grant and may publish lesson plans and program summaries in their aviation education publications (with credit given).

Signature: _____

1999 Virginia Aviation Art Contest Results

The Commonwealth of Virginia had approximately 300 entries in the 1999 International Aviation Art Contest. The theme of "Flying is Fun" was interpreted by students in many creative ways.

Judging for the Virginia level of the contest took place in Richmond on Friday, February 19. Dr. Luther Gore of the American Society of Aviation Artists (ASAA) once again chaired the judging panel.

Virginia's winners were:

Category I: (Ages 6-9)

First Place:

James Jervey, Age 8
Joseph P. King Elementary School
Franklin, Virginia

Second Place:

Scottie Bowman, Age 8
Ridge Elementary School
Richmond, Virginia

Third Place:

Kylee Ponder, Age 8
Joseph P. King Elementary School
Franklin, Virginia

Category II: (Ages 10-13)

First Place:

Nancy Ngo, Age 13
Carl Sandburg Middle School
Alexandria, Virginia

Second Place:

Quy Anh Nguyen, Age 11
Drewry Mason Middle School
Ridgeway, Virginia

Third Place:

Tiffanie Walker, Age 13
Drewry Mason Middle School
Ridgeway, Virginia

Category III (Age 14-17)

First Place:

Alvin Parker, Age 15
Green Run High School
Virginia Beach, Virginia

Second Place:

Anthony Williams, Age 14
Dunbar Middle School
Lynchburg, Virginia

Third Place:

Catherine Persichina, Age 15
Green Run High School
Virginia Beach, Virginia

The theme for next year's contest will be available at the beginning of the 99/00 school year.



Art contest judges Luther Gore (left) and Chris Stone display some of Virginia's winning artwork.

National Air and Space Museum Calendar

Wednesday, May 5, 1999

Exploring Space Lecture Series 1999

"Images from the Hubble Space Telescope: Delight at the End of the Tunnel"

Sandra Faber, Professor at the University of California, Santa Cruz, an experienced observer with the Hubble Space Telescope, will tour the universe using some of its most notable and beautiful images. With these a springboard, she will go on to explore the meaning of the flood of new astronomical images created by new technologies in the 20th century --- and particularly lately --- to culture, economics, the environment, and philosophy. The lecture takes place at 7:30 p.m. in the Albert Einstein Planetarium. Tickets are not required and the lecture is free.

Thursday, May 20, 1999

1999 Charles A. Lindbergh Memorial Lecture

Clay Lacy

During his career, Clay Lacy has been characterized as a show biz glamour pilot, military jock, experimental test pilot, unlimited air race champion, aviation record setter, United Airlines #1 pilot, a teacher, entrepreneur, and the unchallenged holder of the highest number of flight hours of any active pilot. Lacy's business reflects his diverse interests; his company is not only a respected jet charter company but also a leader in the field of aerial cinematography. Since 1965, Lacy's three specially equipped Lear jets have shot footage for airlines, corporations, military, and over 100 projects in television and movie industry, including the movie *Top Gun*. Admission is free. Tickets are not required; seating is first-come, first-served, with doors opening 1/2 hour in advance.

Wednesday, June 23, 1999

Exploring Space Lecture Series 1999

"After the Big Bang"

Robert W. Wilson is co-discoverer (with Arno Penzias) of the Cosmic Microwave Background radiation, the most vital evidence yet that the universe originated from a "Big Bang." Now Senior Scientist at the Smithsonian Astrophysical Observatory, Dr. Wilson will recount their process of detection and discovery at Bell Labs, ending with a brief history of the universe starting at the tender age of a microsecond. The lecture takes place at 7:30 p.m. in the Albert Einstein Planetarium. Tickets are not required and the lecture is free.

Planetarium Feature:

"And A Star to Steer Here By"

Also Showing:

"Sky Quest" and "The Stars Tonight"

Paul E. Garber Preservation, Restoration, and Storage Facility

Get a behind-the-scenes look at the restoration workshop in Suitland, Maryland, where skilled craftsmen restore aircraft, satellites, and flight-related artifacts. Free tours last approximately three hours. 10:00 a.m., Monday through Friday; 10:00 a.m. and 1:00 p.m. Saturday and Sunday. For reservations, call (202) 357-1400 (voice) or (202) 357-1505 (TTY).

For general information call (202) 357-2700 (voice) or (202) 357-1729 (TTY).



Link your students to examples of how mathematics and science are used everyday by NASA aeronautical engineers and scientists. NASA CONNECT consists of interactive, 30-minute instructional programs that use NASA projects, facilities, and researchers to enhance the teaching of elementary and middle school math and science. Each program includes a lesson; a hands-on component; and a web-based, online, interactive component. NASA CONNECT is free; there are no fees or charges associated with the program. Educators are encouraged to tape the broadcast and copy the teacher materials. Off-air record rights are granted in perpetuity.

The first five NASA CONNECT programs aired were: Plane Weather; The Shapes of Flight; Wherever You Go, There Your Are; Recipe for the Future; and Quieting the Skies.

Programs for the 1999-2000 Series include:

The Measurement of all Things: Tools of the Trade (October 1999)
Math Concepts: Number and Number Sense, Units, Conversion, Tools
Science Concepts: Science as Inquiry, Reasoning, Logic
NASA Research: Fundamental Aeronautics and Physics, Non-Destructive Testing

The Measurement of all Things: Atmospheric Detectives (November 1999)
Math Concepts: Computation and Estimation, Measurement, Patterns, Tools
Science Concepts: Scientific Methodology, Earth Patterns, Earth/Space Systems
NASA Research: CERES, LASE, SAGE III, PICASSO

Geometry of Exploration: To Mars and Back (December 1999)
Math Concepts: Angles, Graphical Methods, Inference, Reasoning
Science Concepts: Data Collection and Analysis, Experimentation, Physics
NASA Research: Mars Microprobe

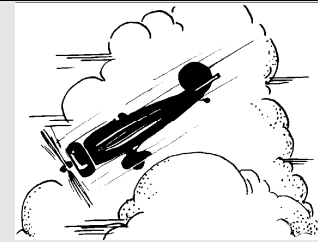
Proportionality: The X-Plane Generation (January 2000)
Math Concepts: Computation and Estimation, Ratios, Measurement, Functions
Science Concepts: Systemic Investigation, Force and Motion, Energy, Heat and Sound
NASA Research: X-Planes

Geometry of Exploration: Wings Over Mars (February 2000)
Math Concepts: Measurement, Geometric Shapes, Data Collection and Analysis
Science Concepts: Force, Motion, Energy, Space Systems, Physical Changes
NASA Research: Mars Airplane

Proportionality: Modeling the Future (March 2000)
Math Concepts: Measurement, Computation, Ratios, Data Visualization
Science Concepts: Force, Motion, Energy, Temperature, Heat, Sound
NASA Research: Three Pillars, Goal 1: Affordable Air Travel

Algebra: Mirror, Mirror on the Universe (April 2000)
Math Concepts: Estimation, Expressions and Solving Equations, Word Problems
Science Concepts: Matter, Temperature, Chemical and Physical Changes, Light
NASA Research: Next Generation Space Telescope

To obtain more information about, sign-up for, and/or download materials from NASA CONNECT visit them on the web at: <http://edu.larc.nasa.gov/connect/>.



VIRGINIA AVIATION MUSEUM CALENDAR

May 11, 1999

FAA Certified Flight Instructor Safety Seminar

7-9 p.m. For more information call (804) 222-7494.

May 13, 1999

FAA Pilot Safety Seminar

7-9 p.m. For more information call (804) 222-7494.

May 15, 1999

MASH BASH

Celebrate Armed Forces Day by dancing to the music of the 60's and 70's at the MASH BASH. Dancing space is limited! Call (804) 236-3622 to reserve your tickets. 7-11 p.m.

May 20, 1999

Guest Speakers Series

Lt. Col. Carlos Troche

Lt. Col. Carlos Troche of Langley Air Force Base talks about the airborne laser system.

June 17, 1999

Guest Speakers Series

Dave Tyndall

Dave Tyndall, Aviation Department Manager for Universal Corporation, details the history of the Waco aircraft. Tyndall is restoring a 1938 EGCO-8 Custom Cabin Waco at the Virginia Aviation Museum.

June 19-20, 1999

Flight Days

A fun-filled weekend celebrating the wonders of flight. You won't want to miss the hands-on activities, demonstrations, Carpenter Science Theatre productions and airplanes of all sizes. 10 a.m. - 4 p.m.

Guest Speakers Series Programs begin at 7:00 p.m. in the Benn Theater. Please call (804) 236-3622 to confirm date and time. The Virginia Aviation Museum is open daily from 9:30 a.m. to 5:00 p.m. Admission is \$5.00 for adults, \$4.00 for seniors and \$3.00 for youth. It is located at Richmond International Airport, 5701 Huntsman Road, Richmond International Airport, Virginia 23250. For further information on events and schedules, call (804) 236-3622.

Aviation Education Corner

"What A Drag" Experiment

This experiment was copied from the "Exploring Aeronautics" CD-ROM developed by the National Aeronautics and Space Administration (NASA).

This particular experiment, taken from Chapter 1, "The Science of Flight" helps students to understand how drag, one of the four forces of flight, works.

In future editions of the VASEF Newsletter other experiments from the CD-ROM will appear. These materials are geared for students from grades 5-8 but you may use them as you see fit.



Part 1

The Science of Flight

Experiment: What a Drag!

Procedure Card

Materials

15 centimeters x 15 centimeters square piece of plastic grocery bag
four pieces of thread, 12 centimeters in length
one metal ring or weight

Experiment Set Up

Tie a piece of thread to each corner of the plastic grocery bag square.

Tie the remaining ends of each thread together onto the metal ring/weight.

Experiment Procedure

1. Hold the metal ring/weight at a height of about three meters and let it go.
2. Observe and record.
3. Hold the plastic piece at its center with the weight hanging down.
4. Hold it at a height of about three meters and let it go.
5. Observe and record.

Section 2

160

Content - 5



Part 1

The Science of Flight

Experiment Log - Key Page 1

Experiment: What a Drag!

Steps

1. State the problem.

QUESTION

(What do I want to know?)

What does drag do to a moving object?

OR

How does drag act on moving object?

OR

How does drag slow things down?

Data

2. Form a hypothesis.

PREDICTION

(What do I think is going to happen?)

I think the weight will not fall to the ground as fast with the cloth attached to it because the cloth will be like a parachute and catch the air underneath it, slowing it down.

OR

I think the weight will slow down a little because the cloth will catch the air.

3. Design an experiment.

MATERIALS & PROCEDURES

(What steps will I take to do this experiment? What things will I need?)

Materials:

Square piece of plastic grocery bag • thread • metal ring/weight

Procedure:

1. Drop metal weight from 3 meters above ground.
2. Observe and record.
3. Assemble cloth and thread and attach to weight.
4. Drop weight from 3 meters above ground.
5. Observe and record.

Section 2

161

Content - T/OT



Part 1

The Science of Flight

Experiment Log - Key Page 2

Experiment: What a Drag!

Steps

4. Perform the experiment.

OBSERVE and RECORD DATA

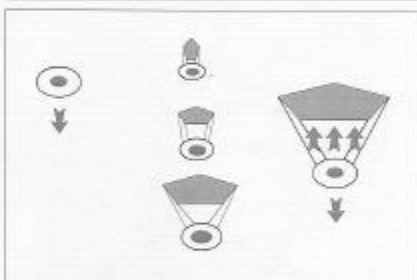
(What information did I gather during this experiment?)

The first time the weight went straight down fast.

The second time, the plastic piece spread out and caught air under it. This slowed down the fall of the weight. It floated a lot slower to the ground.

5. Organize and analyze data.

(Make a graph, chart, picture or diagram.)



6. Draw conclusions.

(What do my results mean? Was my hypothesis right or wrong? Can I explain why?)

I was right. The plastic piece acted just like a parachute. As the weight fell, it opened up and caught more air molecules underneath it. This made a force that slowed the plastic piece and the weight down.

Section 2

162

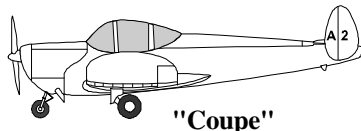
Content - T/OT

The "Coupes" Are Returning to College Park

On February 17, 1999, four Coupes (three Ercoupes and one Alon AirCoupe) arrived at the College Park Airport, Maryland as the first activity of the newly formed Coupe Homecoming Club (CHC). These Coupes were on-hand to participate in the first CHC Air Race. At 10:30 the race briefing began and by 11:30 all the pilots were in their aircraft with engines running ready to take their positions for takeoff and the beginning of the air race. Aircraft launched at one minute intervals and after reaching 1000 feet above the airport turned on course for the 75 mile race. Every aircraft, although a Coupe, was unique representing different models, different engines (with horsepower ranging from 75 to 100) as well as differing aircraft weights and loads (one aircraft carried two persons while the rest had only one person each). In spite of all the variables, all four aircraft remained in the order they departed College Park and landed back at College Park at between 44 and 46 minutes after takeoff. Average speed for the race was 100 mph and was held to this level by strong and gusty winds enroute that caused all pilots to fly their aircraft at less than full performance. Over half the race was flown directly into a headwind that reduced ground speed to 88 mph for that portion.

The winner of the race was Ron Rheude from Centreville, Virginia with the Alon. Ron carried with him his son as his copilot and navigator. Ron was awarded a winner's certificate and a carved Coupe trophy noting his winning of the

First Coupe Homecoming Club Air Race. Other pilots participating in the race were Frank Glynn of Crofton, Maryland; Charles McKeown of Milton, Delaware, and Robert Swanson of Fort Washington, Maryland. The next CHC Air Race is scheduled for May 9th. For information about the Coupe Homecoming Club and a schedule of up-coming activities contact Robert Swanson at (301) 248-5394 in the evenings.



SVCC Workshop

The annual Southwest Virginia Community College Aerospace Education Teacher's Workshop is scheduled for July 19-23.

Hands-on activities pertaining to aviation and space topics are a highlight of this annual event.

Presenters from NASA, the Virginia Department of Aviation and other organizations are scheduled.

For more information call SVCC at 1-800-822-7822.

SCIENCE MUSEUM OF VIRGINIA CALENDAR

IMAX FILMS:

WHALES (March 6-May 21)
GRAND CANYON: THE HIDDEN SECRETS (March 6-May 21)
ROLLING STONES "AT THE MAX" (March 6-May 21)
MYSTERIES OF EGYPT (May 22-December 3)
EVEREST (May 22-December 3)

PLANETARIUM SHOW:

NIGHT SKY (March 28-December 3)
STARDATE: ANCIENT HORIZONS (May 22-December 3)

LIVESKY: Informal "live" planetarium presentation of the month's celestial events. Third Friday of every month.

SKYWATCH: Third Friday of every month (weather permitting) on the front lawn.

24-Hour Information: (804) 367-0000
Box Office: (804) 367-1080
24-Hour Skywatch Information: (804) 367-8277
24-Hour TDD Information: (804) 367-9760
General Information - TDD: (804) 367-6552
Group Scheduling: (804) 367-6552
Home Page: <http://www.smv.mus.va.us>

VIRGINIA AIR AND SPACE CENTER CALENDAR

VISITING EXHIBITS:

WHAT MAKES MUSIC? thru May 9
THE SCIENCE OF OZ May 22-Sept. 12, 1999

IMAX FILMS:

L-5: FIRST CITY IN SPACE thru Sept. 1999
SPECIAL EFFECTS thru Sept. 1999
MYSTERIES OF EGYPT thru July 15, 1999

SIGMA SERIES LECTURES

May 4, 1999

Pacific Saga: The Disappearance and Rescue of Eddie Rickenbacker in World War II
Presented by W. David Lewis (7:30 p.m.)

June 1, 1999

Mars Surveyor Mission
Presented by Glenn E. Cunningham (7:30 p.m.)

STAR STATION ONE EDUCATION CENTER

- VASC has been chosen as Virginia's only Star Station One Center. This national program is designed to build awareness of the International Space Station with the Center's demonstration, "Get it Together" Sundays from noon to 4 p.m.

Call (804) 727-0900 for show times
Visit the Center's Home Page:
<http://www.vasc.org>

Aviation & Space



Web Sites

Civil Air Patrol	http://www.cap.af.mil
NASA Kennedy Space Center	http://www.ksc.nasa.gov/ksc.htm
NASA CONNECT	http://edu.larc.nasa.gov/connect/
NASA Langley Education	http://edu.larc.nasa.gov
Sun 'n Fun Fly-In	http://sun-n-fun.com

Calendar of Events

May 22, 1999 **Danville Air and Car Show.** Main acts include the All-American Firebirds performing dynamic formation aerobatics, parachute and ultralight demonstrations, Big Bubbenski (the largest single-engine airplane in the world), and the Flying Farmer (a fun-filled family oriented comedy act). For more information contact Lane Rodgers at 804-799-6475 or e-mail airport@gamewood.net. Raindate is Sunday, May 23rd.

May 22-23, 1999 **EAA Chapter 186 Spring Fly-In** will be held at Winchester Regional Airport from 8:00 a.m. - 5:00 p.m. A pancake breakfast will be held both days from 8:00 a.m. - 11:00 a.m. Static display of various aircraft including classics, homebuilts, antiques, and warbirds. Airplane and helicopter rides are available. Demos, aircraft judging, childrens' play area, and ongoing activities. Concessions, souvenirs, and good food. Come and join the fun. Sponsored by EAA Chapter 186 and Winchester Airport. For more information contact Tangy Mooney at 703-780-6329 or EAA186@usa.net.

June 26-27, 1999 **Virginia State EAA Fly-In** will take place at the Petersburg Municipal Airport from 8:00 a.m. - 5:00 p.m. Annual fly-in includes warbirds, ultralights, powered parachutes, vendors, and seminars. Sponsored by the Virginia Council of EAA Chapters. For more information contact Mr. Ron VanSickle at 804-932-4709 or e-mail pvansickle@juno.com or visit the web site <http://www.vaeea.org>.

Aviation Education Supporters:

VASEF projects are funded by our membership fees and by donations from our member organizations. We would appreciate your support through membership in our organization.

_____ Regular Membership \$25.00 annually (July - Dec. \$12.50)

_____ Non-Profit Organization \$25.00 annually (July - Dec. \$12.50)

_____ Corporate Membership \$100.00 annually (July - Dec. \$50.00)

_____ New Member

_____ Renewal

Date: _____

Name: _____

Name of Organization: _____

Occupation: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____

Please Return to: Tom Tyndall, VASEF Treasurer
5702 Gulfstream Road
Richmond, Virginia 23250-2422



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Inside:

Educational Grants for Teachers are available from the Virginia Department of Aviation.



NASA CONNECT

Enhance Mathematics and Science for Elementary and Middle School students using free televised and web-based program.

Please Post for Teachers



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Second Year!

Virginia Department of Aviation Teachers Grant Program

Have you wanted to enhance your students' learning experience by integrating aviation into your teaching? Have you had a great idea for a lesson plan or other class activity with an aviation-related theme that you felt would benefit your students but could not implement because of lack of funding?

The Virginia Department of Aviation's Teachers Grant Program may be able to assist you!

Guidelines:

1. A maximum of one grant per individual teacher and /or school per school year is allowed.
2. The total amount requested for each grant must not be more than \$250.00. There is a cap on total grant funding for each school year. Grant applications will be ranked and funded until this cap has been reached.
3. Funds must be used before the end of the school year in which they are approved.
4. The requirements below must be met in order to apply and, once selected, to be reimbursed.

Requirements:

1. Classroom teachers in Virginia's public schools in grades K-12 are eligible to apply. Grants are available to teachers in any discipline provided that the lesson involves aviation.
2. Applications for the 99/00 school year (at right) must be completed and postmarked no later than **September 30, 1999**. Applications will be evaluated and successful applicants will be notified before the end of October 1999.
3. Successful applicants must complete their program before the end of the school year in which the grant is awarded.
4. Successful applicants must agree to submit a final report to the Virginia Department of Aviation at the completion of the program (no later than the end of the school year in which the grant is awarded). This report must include: a summary describing how the program turned out, any lesson plans developed (at least one is required), how many students benefited from the program, a materials list with costs, and an accounting of how the grant money was spent.

Return completed applications to:

Virginia Department of Aviation
Attn: Betty P. Wilson
5702 Gulfstream Road
Richmond, Virginia 23250-2422

Telephone: (804) 225-3783
FAX: (804) 236-3635
E-Mail: wilson@doav.state.va.us



Virginia Department of Aviation Teachers Grant Application

Your Name: _____

If you are requesting the grant as a member of a team, please list team members names below:

Mailing Address: _____

City/State/Zip: _____

Circle one: home address school address

Your Telephone Number: _____

Circle one: home telephone school telephone

Your E-Mail Address: _____

School Name: _____

Grade Taught: _____ Subject: _____

Describe your lesson idea - must utilize some facet of aviation: (in 150-500 words)

Attach additional sheets and/or lesson plans, if prepared.

What Learning Outcomes are you looking for from this project?

If funded, how do you propose to share this lesson with your colleagues?

Amount Requested: _____

What will the grant money be used for: _____

I agree that before the end of the school year in which I receive this grant, I will complete the above project; that I will provide a final report on the program, including copies of lesson plans developed (at least one is required), a summary of how well the program worked, how many students benefited from the program, a shopping list of materials (and costs) for supplies, and an accounting of where the grant money was spent. I understand that the Virginia Department of Aviation will pay for or reimburse only those amounts approved in the original grant and may publish lesson plans and program summaries in their aviation education publications (with credit given).

Signature: _____

1999 Virginia Aviation Art Contest Results

The Commonwealth of Virginia had approximately 300 entries in the 1999 International Aviation Art Contest. The theme of "Flying is Fun" was interpreted by students in many creative ways.

Judging for the Virginia level of the contest took place in Richmond on Friday, February 19. Dr. Luther Gore of the American Society of Aviation Artists (ASAA) once again chaired the judging panel.

Virginia's winners were:

Category I: (Ages 6-9)

First Place:

James Jervey, Age 8
Joseph P. King Elementary School
Franklin, Virginia

Second Place:

Scottie Bowman, Age 8
Ridge Elementary School
Richmond, Virginia

Third Place:

Kylee Ponder, Age 8
Joseph P. King Elementary School
Franklin, Virginia

Category II: (Ages 10-13)

First Place:

Nancy Ngo, Age 13
Carl Sandburg Middle School
Alexandria, Virginia

Second Place:

Quy Anh Nguyen, Age 11
Drewry Mason Middle School
Ridgeway, Virginia

Third Place:

Tiffanie Walker, Age 13
Drewry Mason Middle School
Ridgeway, Virginia

Category III (Age 14-17)

First Place:

Alvin Parker, Age 15
Green Run High School
Virginia Beach, Virginia

Second Place:

Anthony Williams, Age 14
Dunbar Middle School
Lynchburg, Virginia

Third Place:

Catherine Persichina, Age 15
Green Run High School
Virginia Beach, Virginia

The theme for next year's contest will be available at the beginning of the 99/00 school year.



Art contest judges Luther Gore (left) and Chris Stone display some of Virginia's winning artwork.

National Air and Space Museum Calendar

Wednesday, May 5, 1999

Exploring Space Lecture Series 1999

"Images from the Hubble Space Telescope: Delight at the End of the Tunnel"

Sandra Faber, Professor at the University of California, Santa Cruz, an experienced observer with the Hubble Space Telescope, will tour the universe using some of its most notable and beautiful images. With these a springboard, she will go on to explore the meaning of the flood of new astronomical images created by new technologies in the 20th century --- and particularly lately --- to culture, economics, the environment, and philosophy. The lecture takes place at 7:30 p.m. in the Albert Einstein Planetarium. Tickets are not required and the lecture is free.

Thursday, May 20, 1999

1999 Charles A. Lindbergh Memorial Lecture

Clay Lacy

During his career, Clay Lacy has been characterized as a show biz glamour pilot, military jock, experimental test pilot, unlimited air race champion, aviation record setter, United Airlines #1 pilot, a teacher, entrepreneur, and the unchallenged holder of the highest number of flight hours of any active pilot. Lacy's business reflects his diverse interests; his company is not only a respected jet charter company but also a leader in the field of aerial cinematography. Since 1965, Lacy's three specially equipped Lear jets have shot footage for airlines, corporations, military, and over 100 projects in television and movie industry, including the movie *Top Gun*. Admission is free. Tickets are not required; seating is first-come, first-served, with doors opening 1/2 hour in advance.

Wednesday, June 23, 1999

Exploring Space Lecture Series 1999

"After the Big Bang"

Robert W. Wilson is co-discoverer (with Arno Penzias) of the Cosmic Microwave Background radiation, the most vital evidence yet that the universe originated from a "Big Bang." Now Senior Scientist at the Smithsonian Astrophysical Observatory, Dr. Wilson will recount their process of detection and discovery at Bell Labs, ending with a brief history of the universe starting at the tender age of a microsecond. The lecture takes place at 7:30 p.m. in the Albert Einstein Planetarium. Tickets are not required and the lecture is free.

Planetarium Feature:

"And A Star to Steer Here By"

Also Showing:

"Sky Quest" and "The Stars Tonight"

Paul E. Garber Preservation, Restoration, and Storage Facility

Get a behind-the-scenes look at the restoration workshop in Suitland, Maryland, where skilled craftsmen restore aircraft, satellites, and flight-related artifacts. Free tours last approximately three hours. 10:00 a.m., Monday through Friday; 10:00 a.m. and 1:00 p.m. Saturday and Sunday. For reservations, call (202) 357-1400 (voice) or (202) 357-1505 (TTY).

For general information call (202) 357-2700 (voice) or (202) 357-1729 (TTY).



Link your students to examples of how mathematics and science are used everyday by NASA aeronautical engineers and scientists. NASA CONNECT consists of interactive, 30-minute instructional programs that use NASA projects, facilities, and researchers to enhance the teaching of elementary and middle school math and science. Each program includes a lesson; a hands-on component; and a web-based, online, interactive component. NASA CONNECT is free; there are no fees or charges associated with the program. Educators are encouraged to tape the broadcast and copy the teacher materials. Off-air record rights are granted in perpetuity.

The first five NASA CONNECT programs aired were: Plane Weather; The Shapes of Flight; Wherever You Go, There Your Are; Recipe for the Future; and Quieting the Skies.

Programs for the 1999-2000 Series include:

The Measurement of all Things: Tools of the Trade (October 1999)
Math Concepts: Number and Number Sense, Units, Conversion, Tools
Science Concepts: Science as Inquiry, Reasoning, Logic
NASA Research: Fundamental Aeronautics and Physics, Non-Destructive Testing

The Measurement of all Things: Atmospheric Detectives (November 1999)
Math Concepts: Computation and Estimation, Measurement, Patterns, Tools
Science Concepts: Scientific Methodology, Earth Patterns, Earth/Space Systems
NASA Research: CERES, LASE, SAGE III, PICASSO

Geometry of Exploration: To Mars and Back (December 1999)
Math Concepts: Angles, Graphical Methods, Inference, Reasoning
Science Concepts: Data Collection and Analysis, Experimentation, Physics
NASA Research: Mars Microprobe

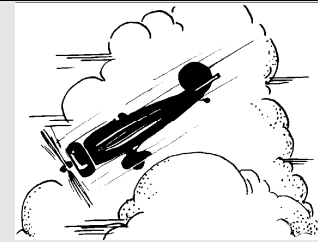
Proportionality: The X-Plane Generation (January 2000)
Math Concepts: Computation and Estimation, Ratios, Measurement, Functions
Science Concepts: Systemic Investigation, Force and Motion, Energy, Heat and Sound
NASA Research: X-Planes

Geometry of Exploration: Wings Over Mars (February 2000)
Math Concepts: Measurement, Geometric Shapes, Data Collection and Analysis
Science Concepts: Force, Motion, Energy, Space Systems, Physical Changes
NASA Research: Mars Airplane

Proportionality: Modeling the Future (March 2000)
Math Concepts: Measurement, Computation, Ratios, Data Visualization
Science Concepts: Force, Motion, Energy, Temperature, Heat, Sound
NASA Research: Three Pillars, Goal 1: Affordable Air Travel

Algebra: Mirror, Mirror on the Universe (April 2000)
Math Concepts: Estimation, Expressions and Solving Equations, Word Problems
Science Concepts: Matter, Temperature, Chemical and Physical Changes, Light
NASA Research: Next Generation Space Telescope

To obtain more information about, sign-up for, and/or download materials from NASA CONNECT visit them on the web at: <http://edu.larc.nasa.gov/connect/>.



VIRGINIA AVIATION MUSEUM CALENDAR

May 11, 1999

FAA Certified Flight Instructor Safety Seminar

7-9 p.m. For more information call (804) 222-7494.

May 13, 1999

FAA Pilot Safety Seminar

7-9 p.m. For more information call (804) 222-7494.

May 15, 1999

MASH BASH

Celebrate Armed Forces Day by dancing to the music of the 60's and 70's at the MASH BASH. Dancing space is limited! Call (804) 236-3622 to reserve your tickets. 7-11 p.m.

May 20, 1999

Guest Speakers Series

Lt. Col. Carlos Troche

Lt. Col. Carlos Troche of Langley Air Force Base talks about the airborne laser system.

June 17, 1999

Guest Speakers Series

Dave Tyndall

Dave Tyndall, Aviation Department Manager for Universal Corporation, details the history of the Waco aircraft. Tyndall is restoring a 1938 EGCO-8 Custom Cabin Waco at the Virginia Aviation Museum.

June 19-20, 1999

Flight Days

A fun-filled weekend celebrating the wonders of flight. You won't want to miss the hands-on activities, demonstrations, Carpenter Science Theatre productions and airplanes of all sizes. 10 a.m. - 4 p.m.

Guest Speakers Series Programs begin at 7:00 p.m. in the Benn Theater. Please call (804) 236-3622 to confirm date and time. The Virginia Aviation Museum is open daily from 9:30 a.m. to 5:00 p.m. Admission is \$5.00 for adults, \$4.00 for seniors and \$3.00 for youth. It is located at Richmond International Airport, 5701 Huntsman Road, Richmond International Airport, Virginia 23250. For further information on events and schedules, call (804) 236-3622.

Aviation Education Corner

"What A Drag" Experiment

This experiment was copied from the "Exploring Aeronautics" CD-ROM developed by the National Aeronautics and Space Administration (NASA).

This particular experiment, taken from Chapter 1, "The Science of Flight" helps students to understand how drag, one of the four forces of flight, works.

In future editions of the VASEF Newsletter other experiments from the CD-ROM will appear. These materials are geared for students from grades 5-8 but you may use them as you see fit.



Part 1

The Science of Flight

Experiment: What a Drag!

Procedure Card

Materials

15 centimeters x 15 centimeters square piece of plastic grocery bag
four pieces of thread, 12 centimeters in length
one metal ring or weight

Experiment Set Up

Tie a piece of thread to each corner of the plastic grocery bag square.

Tie the remaining ends of each thread together onto the metal ring/weight.

Experiment Procedure

1. Hold the metal ring/weight at a height of about three meters and let it go.
2. Observe and record.
3. Hold the plastic piece at its center with the weight hanging down.
4. Hold it at a height of about three meters and let it go.
5. Observe and record.

Section 2

160

Content - 5



Part 1

The Science of Flight

Experiment Log - Key Page 1

Experiment: What a Drag!

Steps

1. State the problem.

QUESTION

(What do I want to know?)

What does drag do to a moving object?

OR

How does drag act on moving object?

OR

How does drag slow things down?

Data

2. Form a hypothesis.

PREDICTION

(What do I think is going to happen?)

I think the weight will not fall to the ground as fast with the cloth attached to it because the cloth will be like a parachute and catch the air underneath it, slowing it down.

OR

I think the weight will slow down a little because the cloth will catch the air.

3. Design an experiment.

MATERIALS & PROCEDURES

(What steps will I take to do this experiment? What things will I need?)

Materials:

Square piece of plastic grocery bag • thread • metal ring/weight

Procedure:

1. Drop metal weight from 3 meters above ground.
2. Observe and record.
3. Assemble cloth and thread and attach to weight.
4. Drop weight from 3 meters above ground.
5. Observe and record.

Section 2

161

Content - T/OT



Part 1

The Science of Flight

Experiment Log - Key Page 2

Experiment: What a Drag!

Steps

4. Perform the experiment.

OBSERVE and RECORD DATA

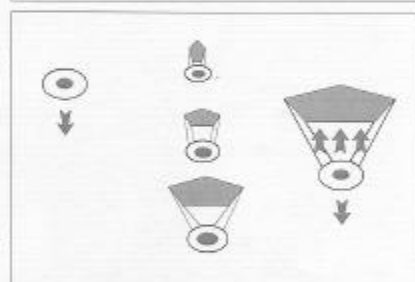
(What information did I gather during this experiment?)

The first time the weight went straight down fast.

The second time, the plastic piece spread out and caught air under it. This slowed down the fall of the weight. It floated a lot slower to the ground.

5. Organize and analyze data.

(Make a graph, chart, picture or diagram.)



6. Draw conclusions.

(What do my results mean? Was my hypothesis right or wrong? Can I explain why?)

I was right. The plastic piece acted just like a parachute. As the weight fell, it opened up and caught more air molecules underneath it. This made a force that slowed the plastic piece and the weight down.

Section 2

162

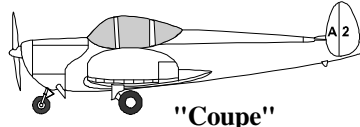
Content - T/OT

The "Coupes" Are Returning to College Park

On February 17, 1999, four Coupes (three Ercoupes and one Alon AirCoupe) arrived at the College Park Airport, Maryland as the first activity of the newly formed Coupe Homecoming Club (CHC). These Coupes were on-hand to participate in the first CHC Air Race. At 10:30 the race briefing began and by 11:30 all the pilots were in their aircraft with engines running ready to take their positions for takeoff and the beginning of the air race. Aircraft launched at one minute intervals and after reaching 1000 feet above the airport turned on course for the 75 mile race. Every aircraft, although a Coupe, was unique representing different models, different engines (with horsepower ranging from 75 to 100) as well as differing aircraft weights and loads (one aircraft carried two persons while the rest had only one person each). In spite of all the variables, all four aircraft remained in the order they departed College Park and landed back at College Park at between 44 and 46 minutes after takeoff. Average speed for the race was 100 mph and was held to this level by strong and gusty winds enroute that caused all pilots to fly their aircraft at less than full performance. Over half the race was flown directly into a headwind that reduced ground speed to 88 mph for that portion.

The winner of the race was Ron Rheude from Centreville, Virginia with the Alon. Ron carried with him his son as his copilot and navigator. Ron was awarded a winner's certificate and a carved Coupe trophy noting his winning of the

First Coupe Homecoming Club Air Race. Other pilots participating in the race were Frank Glynn of Crofton, Maryland; Charles McKeown of Milton, Delaware, and Robert Swanson of Fort Washington, Maryland. The next CHC Air Race is scheduled for May 9th. For information about the Coupe Homecoming Club and a schedule of up-coming activities contact Robert Swanson at (301) 248-5394 in the evenings.



SVCC Workshop

The annual Southwest Virginia Community College Aerospace Education Teacher's Workshop is scheduled for July 19-23.

Hands-on activities pertaining to aviation and space topics are a highlight of this annual event.

Presenters from NASA, the Virginia Department of Aviation and other organizations are scheduled.

For more information call SVCC at 1-800-822-7822.

SCIENCE MUSEUM OF VIRGINIA CALENDAR

IMAX FILMS:

WHALES (March 6-May 21)
GRAND CANYON: THE HIDDEN SECRETS (March 6-May 21)
ROLLING STONES "AT THE MAX" (March 6-May 21)
MYSTERIES OF EGYPT (May 22-December 3)
EVEREST (May 22-December 3)

PLANETARIUM SHOW:

NIGHT SKY (March 28-December 3)
STARDATE: ANCIENT HORIZONS (May 22-December 3)

LIVESKY: Informal "live" planetarium presentation of the month's celestial events. Third Friday of every month.

SKYWATCH: Third Friday of every month (weather permitting) on the front lawn.

24-Hour Information: (804) 367-0000
Box Office: (804) 367-1080
24-Hour Skywatch Information: (804) 367-8277
24-Hour TDD Information: (804) 367-9760
General Information - TDD: (804) 367-6552
Group Scheduling: (804) 367-6552
Home Page: <http://www.smv.mus.va.us>

VIRGINIA AIR AND SPACE CENTER CALENDAR

VISITING EXHIBITS:

WHAT MAKES MUSIC? thru May 9
THE SCIENCE OF OZ May 22-Sept. 12, 1999

IMAX FILMS:

L-5: FIRST CITY IN SPACE thru Sept. 1999
SPECIAL EFFECTS thru Sept. 1999
MYSTERIES OF EGYPT thru July 15, 1999

SIGMA SERIES LECTURES

May 4, 1999

Pacific Saga: The Disappearance and Rescue of Eddie Rickenbacker in World War II
Presented by W. David Lewis (7:30 p.m.)

June 1, 1999

Mars Surveyor Mission
Presented by Glenn E. Cunningham (7:30 p.m.)

STAR STATION ONE EDUCATION CENTER

- VASC has been chosen as Virginia's only Star Station One Center. This national program is designed to build awareness of the International Space Station with the Center's demonstration, "Get it Together" Sundays from noon to 4 p.m.

Call (804) 727-0900 for show times
Visit the Center's Home Page:
<http://www.vasc.org>

Aviation & Space



Web Sites

Civil Air Patrol	http://www.cap.af.mil
NASA Kennedy Space Center	http://www.ksc.nasa.gov/ksc.htm
NASA CONNECT	http://edu.larc.nasa.gov/connect/
NASA Langley Education	http://edu.larc.nasa.gov
Sun 'n Fun Fly-In	http://sun-n-fun.com

Calendar of Events

May 22, 1999 **Danville Air and Car Show.** Main acts include the All-American Firebirds performing dynamic formation aerobatics, parachute and ultralight demonstrations, Big Bubbenski (the largest single-engine airplane in the world), and the Flying Farmer (a fun-filled family oriented comedy act). For more information contact Lane Rodgers at 804-799-6475 or e-mail airport@gamewood.net. Raindate is Sunday, May 23rd.

May 22-23, 1999 **EAA Chapter 186 Spring Fly-In** will be held at Winchester Regional Airport from 8:00 a.m. - 5:00 p.m. A pancake breakfast will be held both days from 8:00 a.m. - 11:00 a.m. Static display of various aircraft including classics, homebuilts, antiques, and warbirds. Airplane and helicopter rides are available. Demos, aircraft judging, childrens' play area, and ongoing activities. Concessions, souvenirs, and good food. Come and join the fun. Sponsored by EAA Chapter 186 and Winchester Airport. For more information contact Tangy Mooney at 703-780-6329 or EAA186@usa.net.

June 26-27, 1999 **Virginia State EAA Fly-In** will take place at the Petersburg Municipal Airport from 8:00 a.m. - 5:00 p.m. Annual fly-in includes warbirds, ultralights, powered parachutes, vendors, and seminars. Sponsored by the Virginia Council of EAA Chapters. For more information contact Mr. Ron VanSickle at 804-932-4709 or e-mail pvansickle@juno.com or visit the web site <http://www.vaeea.org>.

Aviation Education Supporters:

VASEF projects are funded by our membership fees and by donations from our member organizations. We would appreciate your support through membership in our organization.

_____ Regular Membership \$25.00 annually (July - Dec. \$12.50)

_____ Non-Profit Organization \$25.00 annually (July - Dec. \$12.50)

_____ Corporate Membership \$100.00 annually (July - Dec. \$50.00)

_____ New Member

_____ Renewal

Date: _____

Name: _____

Name of Organization: _____

Occupation: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____

Please Return to: Tom Tyndall, VASEF Treasurer
5702 Gulfstream Road
Richmond, Virginia 23250-2422



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Richmond, Virginia 23250-2422

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Inside:

Educational Grants for Teachers are available from the Virginia Department of Aviation.



NASA CONNECT

Enhance Mathematics and Science for Elementary and Middle School students using free televised and web-based program.

Please Post for Teachers